

Claims

What is claimed is:

1. An electric motor for an electric fan having a fan housing, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising:
a mounting portion of the motor casing; and
an insulating member mounted to the mounting portion of the motor casing without a separate fastener;
the insulating member configured to accept a fastener that can be utilized to mount the motor casing to the fan housing such that the motor casing and the fan housing are insulated from each other.
2. The electric motor of claim 1, wherein the insulating member includes a base portion and a protrusion extending therefrom, the protrusion being mounted to the mounting portion of the motor casing.
3. The electric motor of claim 1, wherein at least a portion of the insulating member is disposed within a mounting aperture disposed within the mounting portion of the motor casing.
4. The electric motor of claim 2, wherein the base portion of the insulating member is disk shaped.
5. The electric motor of claim 2, wherein the protrusion includes a hole therein to accept the fastener.

6. The electric motor of claim 3, wherein the portion of the insulating member is securely fit within the mounting aperture of the motor casing.
7. The electric motor of claim 3, wherein the portion of the insulating member is press-fit within the mounting aperture of the motor casing.
8. The electric motor of claim 1, wherein a general point of attachment is defined by the mounting of the insulator member to the motor casing.
9. The electric motor of claim 8, wherein the insulating member accepts the fastener at the general point of attachment.
10. The electric motor of claim 1, further comprising:
 - a second mounting portion of the motor casing; and
 - a second insulating member mounted to the second mounting portion of the motor casing without a separate fastener;the second insulating member configured to accept a second fastener that can be utilized to mount the motor casing to the fan housing such that the motor casing and the fan housing are insulated from each other.
11. The electric motor of claim 1, wherein the insulating member is further configured to insulate the fastener from the motor casing when the motor casing is mounted to the fan housing.
12. An insulated mounting arrangement for mounting an electric motor to a fan housing of an electric fan, the arrangement comprising:
 - a mounting portion of a motor casing of the electric motor;

an insulating member mounted to the mounting portion of the motor casing without a separate fastener; and

a fastener disposed through a portion of the fan housing and within the insulating member such that the fan housing is insulated from the motor casing.

13. The arrangement of claim 12, wherein the insulating member includes a base portion and a protrusion extending therefrom, the protrusion being mounted to the mounting portion of the motor casing.

14. The arrangement of claim 13, wherein the protrusion includes a hole therein to accept the fastener.

15. The arrangement of claim 12, wherein at least a portion of the insulating member is disposed within a mounting aperture disposed within the mounting portion of the motor casing.

16. The arrangement of claim 15, wherein the portion of the insulating member is securely fit within the mounting aperture of the motor casing.

17. The arrangement of claim 15, wherein the portion of the insulating member is press-fit within the mounting aperture of the motor casing.

18. The arrangement of claim 12, wherein a general point of attachment is defined by the mounting of the insulator member to the motor casing.

19. The arrangement of claim 18, wherein the insulating member accepts the fastener at the general point of attachment.

20. The arrangement of claim 12, further comprising:
a second mounting portion of the motor casing of the electric motor;
a second insulating member mounted to the second mounting portion of the motor casing without a separate fastener; and
a second fastener disposed through a second portion of the fan housing and within the second insulating member such that the second fastener is insulated from the motor casing.
21. The arrangement of claim 12, wherein the insulating member insulates the fastener from the motor casing.
22. An electric motor for an electric fan having a fan housing, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising:
a mounting portion of the motor casing; and
an insulating member mounted to the mounting portion of the motor casing without a separate fastener to define a general point of attachment;
the insulating member configured to accept a fastener that can be utilized to mount the motor casing to the fan housing at the general point of attachment such that the motor casing would be insulated from the fan housing.
23. The electric motor of claim 22, wherein at least a portion of the insulating member is mounted within an aperture within the mounting portion of the motor casing.
24. The electric motor of claim 23, wherein the portion of the insulating member is press-fit into the aperture.

25. An insulated mounting arrangement for mounting an electric motor to a fan housing of an electric fan, the arrangement comprising:
- a mounting portion of a motor casing of the electric motor;
 - an insulating member mounted to the mounting portion of the motor casing without a separate fastener to define a general point of attachment; and
 - a fastener disposed through a portion of the fan housing and within the insulating member at the point of attachment such that the fan housing is insulated from the motor casing.
26. The arrangement of claim 25, wherein the fastener is insulated from the motor casing by the insulating member.
27. The arrangement of claim 25, wherein at least a portion of the insulating member is mounted within an aperture within the mounting portion of the motor casing.
28. The arrangement of claim 26, wherein the portion of the insulating member is press-fit into the aperture.
29. An electric motor for an electric fan having a fan housing, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising:
- a mounting portion of the motor casing having a mounting aperture therein; and
 - an insulating member having at least a portion disposed within the mounting aperture to define a general point of attachment to the motor casing;
 - the insulating member configured to accept a fastener disposed through a portion of the fan housing at the point of attachment such that the fan housing and the fastener would be insulated from the motor casing.

30. An insulated mounting arrangement for mounting an electric motor to a fan housing of an electric fan, the arrangement comprising:

a mounting portion of a motor casing of the motor having a mounting aperture therein;

an insulating member having at least a portion disposed within the mounting aperture of the motor casing; and

a fastener disposed through a portion of the fan housing and within the insulating member such that the fan housing and the fastener are insulated from the motor casing.

31. The mounting arrangement of claim 30, wherein the insulating member includes a base portion and a protrusion extending therefrom, the protrusion being disposed within the mounting aperture of the motor casing.

32. The mounting arrangement of claim 31, wherein the base portion of the insulating member is disk shaped.

33. The mounting arrangement of claim 31, wherein the protrusion includes a hole therein to accept the fastener.

34. The mounting arrangement of claim 30, wherein the portion of the insulating member is securely fit within the mounting aperture of the motor casing.

35. The mounting arrangement of claim 30, wherein the portion of the insulating member is press-fit within the mounting aperture of the motor casing.

36. The mounting arrangement of claim 30, further comprising:

a second mounting portion of the motor casing of the motor having a mounting aperture therein;

a second insulating member having at least a portion disposed within the mounting aperture of the second mounting portion of the motor casing; and

a second fastener disposed through a second portion of the fan housing and within the second insulating member such that the fastener is insulated from the motor casing.

37. An electric motor for an electric fan having a fan housing, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising four insulating members each mounted to the motor casing without a separate fastener to define four general points of attachment, each of the insulating members configured to accept a fastener that can be utilized to mount the motor casing to the fan housing at the general points of attachment such that the fan housing would be insulated from the motor casing.

38. An insulator member configured for use in mounting an electric motor to a housing of an electric fan assembly, the motor including a motor casing having at least one mounting aperture, the insulator member comprising:

a base portion having a mounting surface; and

a protrusion extending from the base portion, the protrusion configured to be securely disposed within the mounting aperture of the motor casing;

wherein the mounting surface of the base portion is arranged to oppose a mounting surface of the housing when the motor is mounted to the housing by a fastener that passes through the mounting surface of the housing and penetrates the base portion and the protrusion, the fastener being insulated from the motor casing when the motor is mounted.

39. The insulator member of claim 38, wherein the protrusion is configured to be press-fit into the mounting aperture of the motor casing.

40. The insulator member of claim 38, wherein the protrusion includes a hole therein to accept the fastener.

41. The insulator member of claim 40, wherein the hole is configured to accept a thread-forming fastener.

42. The insulator member of claim 38, wherein the base portion having the mounting surface has a disk shape.

43. An insulated mounting arrangement for mounting an electric motor to a fan housing of an electric fan, the arrangement comprising:

- a mounting portion of a motor casing of the motor having a mounting aperture therein;

- an insulating member having a base portion and a protrusion extending therefrom, the protrusion disposed within the mounting aperture of the motor casing; and

- a fastener disposed through a portion of the fan housing and within the protrusion such that the fan housing and the fastener are insulated from the motor casing.

44. The mounting arrangement of claim 43, further comprising:

- a second mounting portion of the motor casing of the motor having a mounting aperture therein;

- a second insulating member having a base portion and a protrusion extending therefrom, the protrusion disposed within the mounting aperture of the second mounting portion of the motor casing; and

- a second fastener disposed through a second portion of the fan housing and within the protrusion of the second insulating member such that the fan housing and the second fastener are insulated from the motor casing.

45. An electric motor for an electric fan having a fan housing, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising four insulating members each mounted to the motor casing, each of the insulating members configured to accept a fastener that can be utilized to mount the motor casing to the fan housing such that the fan housing would be insulated from the motor casing.

46. The motor of claim 45, wherein the insulating members are further configured such that the fastener would be insulated from the motor casing when the motor casing is mounted to the fan housing.

47. An electric fan comprising a fan housing having a peripheral shroud portion and two grill portions each disposed adjacent the shroud portion, the shroud portion and the grill portions defining an interior region of the fan housing within which a motorized blade assembly is disposed, the motorized blade assembly including at least two insulating members mounted thereto, the motorized blade assembly mounted to the fan housing via at least two fasteners each disposed through the fan housing and within one of the insulating members such that the fan housing is insulated from the motor casing.

48. The electric fan of claim 47, wherein each of the fasteners are insulated from the motor casing.

49. An electric fan comprising a fan housing having a peripheral shroud portion and two grill portions each disposed adjacent the shroud portion, the shroud portion and the grill portions defining an interior region of the fan housing within which a motorized blade assembly is disposed, the motorized blade assembly including at least two mounting holes and at least two insulating members each disposed within one of the mounting holes, the motorized blade assembly mounted to the fan housing via at least

two fasteners each disposed through the fan housing and within one of the insulating members such that the fan housing is insulated from the motor casing.

50. The electric fan of claim 49, wherein each of the fasteners are insulated from the motor casing.

51. An electric fan comprising a fan housing having a peripheral shroud portion and a front and a rear grill portion each disposed adjacent the shroud portion, the shroud portion and the grill portions defining an interior region of the fan housing within which a motorized blade assembly is mounted to a motor mount portion of the fan housing such that the motorized blade assembly is electrically insulated from the fan housing, the motorized blade assembly including a motor having a motor casing, the motor casing having a vented rear surface disposed adjacent to the rear grill portion, the rear grill portion having a first mesh portion defined by a plurality of openings within the rear grill portion, the first mesh portion disposed adjacent to the vented rear surface of the motor casing, the openings of the first mesh portion dimensioned such that a users finger cannot pass therethrough and contact the motor casing while allowing sufficient air flow therethrough to cool the motor.

52. The electric fan of claim 51, the rear grill portion further including a solid surface portion disposed adjacent the motor mount portion of the fan housing where the blade assembly is mounted.

53. An insulated mounting arrangement for mounting an electric motor to a fan housing of an electric fan, the arrangement comprising:
a mounting portion of a motor casing of the motor;
an insulating member connected to the mounting portion of the motor casing; and
a motor mount portion of the fan housing;

the insulating member configured to directly engage the motor mount portion of the fan housing without a separate fastener such that the engagement electrically insulates the fan housing from the motor casing.

54. An electric motor for an electric fan having a fan housing, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising:

a mounting portion of the motor casing having a mounting aperture therein; and
an insulating member having at least a portion disposed within the mounting aperture;

the insulating member configured to accept a fastener disposed through a portion of the fan housing such that the fastener is insulated from the motor casing.

55. The motor of claim 54, wherein the insulating member includes an aperture configured to accept the fastener.

56. The motor of claim 55, wherein the aperture of the insulating member is a hole that is substantially concentrically positioned with respect to the mounting aperture.

57. The motor of claim 54, wherein the insulating member includes a base portion and a protrusion extending therefrom, the protrusion being disposed within the mounting aperture of the motor casing.

58. The motor of claim 54, wherein the portion of the insulating member disposed within the mounting aperture is press-fit therein.

59. An electric motor for an electric fan having a fan housing, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising:
- at least two mounting portions of the motor casing each having a mounting aperture therein; and
 - at least two insulating members each having at least a portion disposed within one of the mounting apertures;
 - each of the insulating members configured to accept a fastener disposed through a portion of the fan housing such that the fastener is insulated from the motor casing.
60. An electric fan comprising:
- a fan housing; and
 - a motorized blade assembly disposed within the fan housing, the motorized blade assembly including an electric motor having a motor casing, the motor casing having a mounting portion having a mounting aperture therein and an insulating member having at least a portion disposed within the mounting aperture to define a general point of attachment to the motor casing, the insulating member having a fastener received therein at the general point of attachment such that the fastener is insulated from the motor casing, the fastener being disposed through a portion of the fan housing to facilitate attachment of the motor to the fan housing.
61. An electric fan having at least one control, the fan comprising:
- a fan housing; and
 - a control casing attached to the fan housing and configured to house the at least one control of the fan, the casing configured to electrically isolate the at least one control from the fan housing.

62. A control module for an electric fan having a fan housing, the control module comprising:
- at least one control configured to be connectable to an electrical circuit associated with the fan; and
 - a casing having an interior portion containing the at least one control associated with the fan, the casing configured to be attachable to the fan housing and configured to electrically insulate the at least one control from the fan housing when it is attached to the fan housing, while allowing access to the control by a user of the fan.
63. An electric fan comprising:
- a fan housing;
 - a motorized blade assembly disposed within the fan housing, the motorized blade assembly including an electric motor having a motor casing mounted to the fan housing;
 - an insulating member disposed between the fan housing and the motor casing to electrically insulate the motor casing from the fan housing;
 - at least one control associated with an electrical circuit of the fan; and
 - a casing having an interior portion containing the at least one control associated with the fan, the casing mounted to the fan housing and configured to electrically insulate the at least one control from the fan housing.
64. An insulated mounting arrangement for mounting an electric motor to a fan housing of an electric fan, the arrangement comprising:
- a first and a second mounting portion of a motor casing of the motor;
 - a first insulating member mounted to the first mounting portion of the motor casing;
 - a second insulating member mounted to the second mounting portion of the motor casing;

a first fastener disposed through a first portion of the fan housing and the first insulating member; and

a second fastener disposed through a second portion of the fan housing and the second insulating member;

wherein the motor casing is insulated from the fan housing.

65. An electric motor for an electric fan having a fan housing, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising:

a first and a second mounting portion of a motor casing of the motor;

a first insulating member mounted to the first mounting portion of the motor casing;

a second insulating member mounted to the second mounting portion of the motor casing;

the first insulating member configured to accept a first fastener utilized when the motor casing is mounted to the fan housing; and

the second insulating member configured to accept a second fastener utilized when the motor casing is mounted to the fan housing;

wherein the motor casing is insulated from the fan housing when mounted thereto.

66. An insulated mounting arrangement for mounting an electric motor to a fan housing of an electric fan, the arrangement comprising:

a mounting portion of a motor casing of the electric motor;

an insulating member mounted to the fan housing; and

a fastener disposed through the insulating member and within the mounting portion of the motor casing such that the fan housing is insulated from the motor casing and the fastener.

67. The arrangement of claim 66, wherein the insulating member is mounted to the fan housing without a fastener.
68. The arrangement of claim 66, wherein the insulating member is mounted within an aperture within the fan housing.
69. The arrangement of claim 66, wherein the insulating member comprises a first portion disposed between the motor casing and the fan housing and a second portion disposed between the fan housing and the fastener.
70. The arrangement of claim 66, further comprising:
a second mounting portion of the motor casing of the electric motor;
a second insulating member mounted to the fan housing; and
a second fastener disposed through the second insulating member and within the second mounting portion of the motor casing such that the fan housing is insulated from the motor casing and the second fastener.
71. An electric fan having a fan housing and a motor, the motor comprising a motor casing having an insulator mounting arrangement configured for mounting the motor to the fan housing, the mounting arrangement comprising four insulating members each mounted to the fan housing, each of the insulating members configured to accept one of four fasteners that mount the motor casing to the fan housing such that the fan housing is insulated from the motor casing.
72. The electric fan of claim 71, wherein each of the fasteners are insulated from the fan housing.

73. . The electric fan of claim 71, wherein the insulating member comprises a first portion disposed between the motor casing and the fan housing and a second portion disposed between the fan housing and the fastener.